Dans le cas de la détente du maximum d'effet, et pour la même pression de 6 atm., les résultats sont les suivants,—

avec les espaces libres effectifs	$T_m=22{\cdot}64$ ch.	Diff. $=3{\cdot}71$ ch. $=16$ per cent.
avec les espaces libres nuls	$T_m=26{\cdot}35$ ch.	

II. "On the Action of Nitrous Acid on Aniline." By A. MATTHIESSEN, Ph.D. Communicated by Professor STOKES, Sec. R.S. Received January 12, 1858.

On repeating the experiments of Hunt* and Hofmann†, on the action of nitrous acid on aniline, I found that the reaction does not take place exactly as these chemists state; Hunt gives the reaction as

$$\left.\begin{matrix} C_{12}\,H_5 \\ H \\ H \end{matrix}\right\} N+NO_3+HO=C_{12}\,H_6\,O_2+N_2+2HO.$$

Hofmann says that phenylic alcohol is not formed, but nitrophenassic acid, when binoxide of nitrogen is led into a diluted solution of the nitrate:

$$\left.\begin{matrix} C_{12}\,H_5 \\ H \\ H \end{matrix}\right\} N+NO_3+NO_5=C_{12}\left\{\begin{matrix} H_5 \\ NO_4 \end{matrix}\right\} O_2+N_2+2HO.$$

This reaction, although correct in the end result, omits the intermediate stage, which is—

$$\left.\begin{matrix} C_{12}\,H_5 \\ H \\ H \end{matrix}\right\} N+H_2\,O_2+NO_3=C_{12}\,H_6\,O_2+NH_3+NO_3,$$

and then $NH_3+NO_3=N_2+3HO$.

On account of the free nitric acid, the phenylic alcohol is always converted into nitrophenassic acid. The ammonia was determined as platinum salt, and two experiments gave 43·9 and 44·1 per cent. of platinum; the theoretical quantity required is 44·2 per cent.

It appears, therefore, when nitrous acid acts on aniline, that in the first part of the reaction it causes only a substitution, and afterwards, the ammonia being attacked by it, gives off nitrogen and water.

* Sill. Am. Journ. (2) viii. 372.

† Chem. Soc. Quart. Journ. iii. 231.

Ammonia was obtained either by treating aniline with nitrous acid, or by the action of nitrate of potash on the chloride, or by leading the binoxide of nitrogen into a solution of the nitrate; the latter was the way generally employed. After about twelve hours' action of NO_2 on a solution of the nitrate in a water-bath, the solution was filtered from the nitrophenassic acid, and distilled with potash, the distillate treated with ether to dissolve out the aniline, redistilled in hydrochloric acid, evaporated, and the ammonia determined as platinum salt. These results have led me to try the action of nitrous acid on other organic bases, and I have already obtained from ethylaniline a base which to all appearance is ethylamin. The chloride gives off, when heated with potash, an alkaline inflammable gas, and the platinum salt resembles that of ethylamin; but the platinum determination made with it does not agree very well with that salt. I am now repeating the reaction on a larger scale, so that I shall shortly be able to see whether it is really ethylamin or not.

The foregoing experiments were carried out in the Royal College of Chemistry under the direction of Professor Hofmann.

III. "On the Existence of Amorphous Starch in a new Tuberaceous Fungus." By Frederick Currey, Esq., M.A. Communicated by Joseph Dalton Hooker, M.D., F.R.S. Received December 17, 1857.

Amorphous starch (including under that term all starch not in the form of the ordinary starch-granule) is rare in the vegetable world. Until the present year Schleiden was the only botanist by whom it had been noticed, and his observations have been doubted by Sanio, Caspary, and Schenk. He (Schleiden) states (Grundzüge, i. 181) that he has seen amorphous starch in the form of a thin pasty layer in the cells of the albumen of *Cardamomum minus*, in *Sarsaparilla*, and in the rhizome of *Carex arenaria*. Sanio* has just published the result of some experiments made by him upon the cells of the epidermis of *Gagea lutea*. Upon applying a solution of iodine to these cells, he observed a fine flocculent blue precipitate in their interior. The blue colour was confined to the fluid contents of the

* Bot. Zeitung, 19th June, 1857.